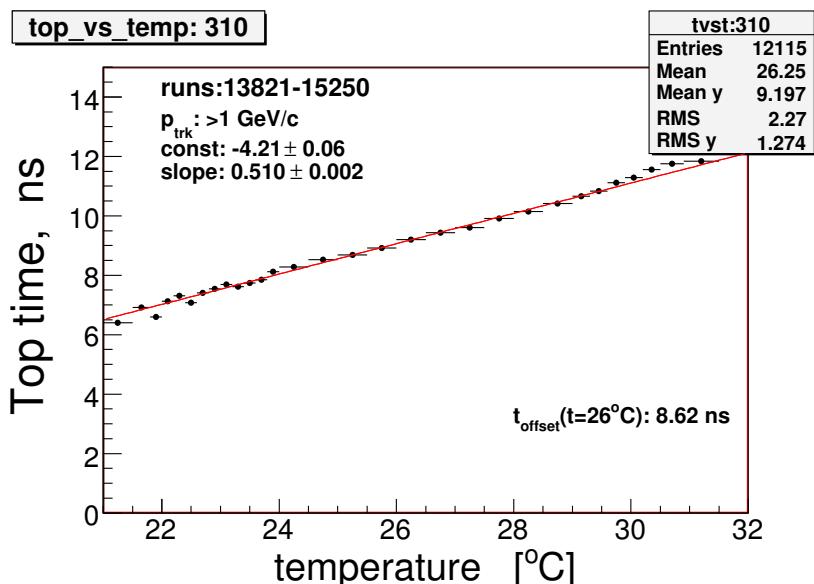
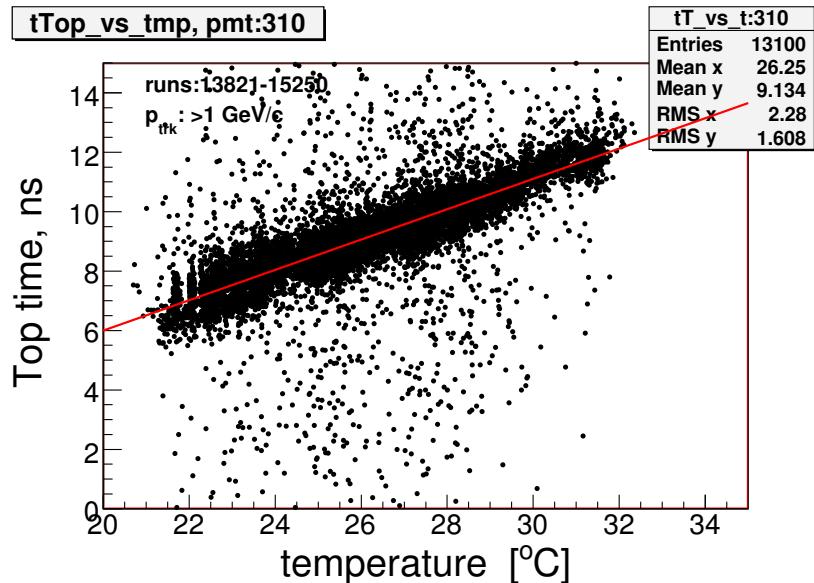


Recent efforts

- rerun the temperature coefficients with Y_{trk} within ± 150 cm.
- apply the time-walk coefficients for each pmt's
- use an average attenuation factor, 250 cm
- what is the ToF resolution?

TDC time vs the temperature



Top plot - the top pmt 310 time vs the temperature. Requirements:

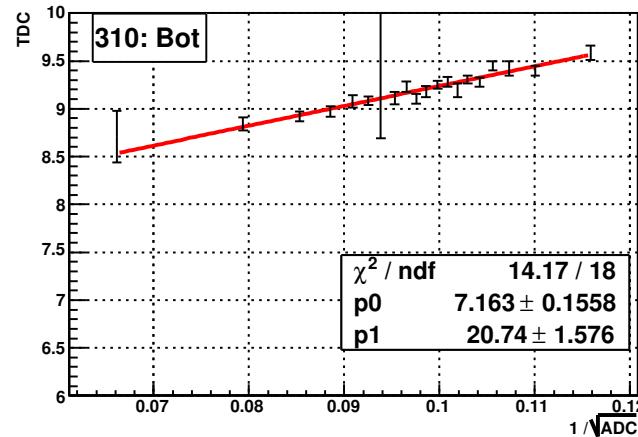
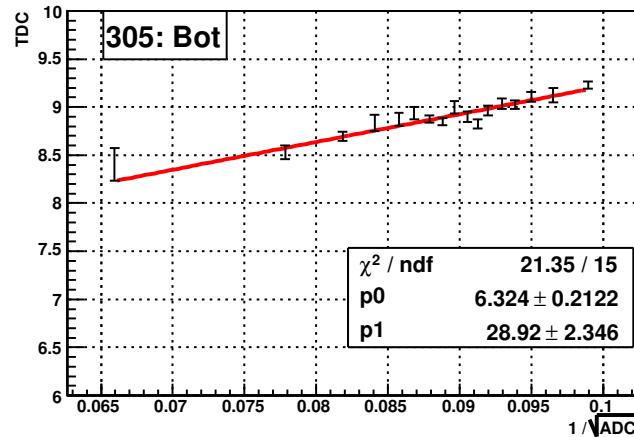
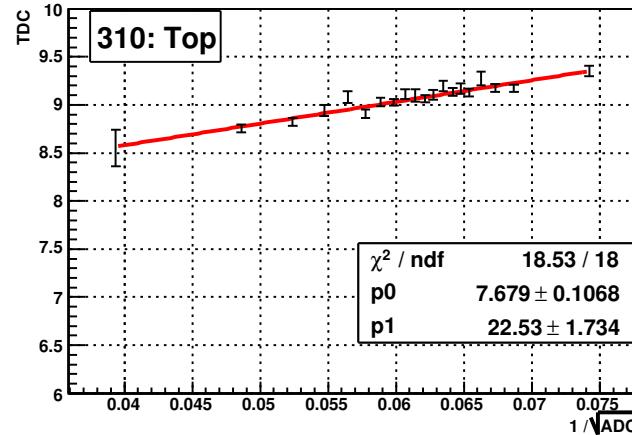
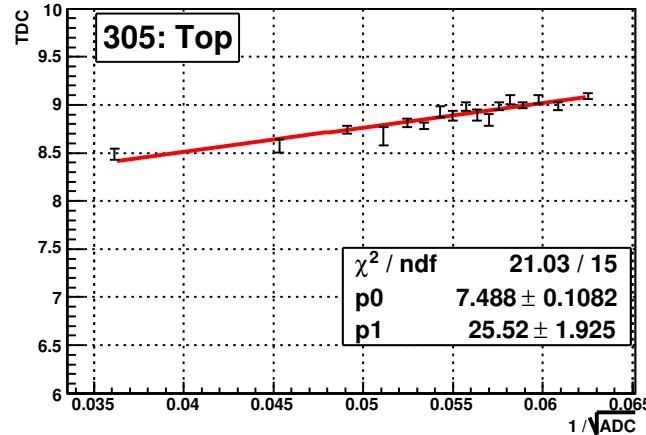
- the adjacent bar cut
- the particles position within $\pm 150 \text{ cm}$
- the event T0 and the cable delay were subtracted
- the particles arrival time (pion) subtracted
- the time was calculated for the center of the bar

The bottom plot - the profile of above data and the fit results.

Time-walk Correction

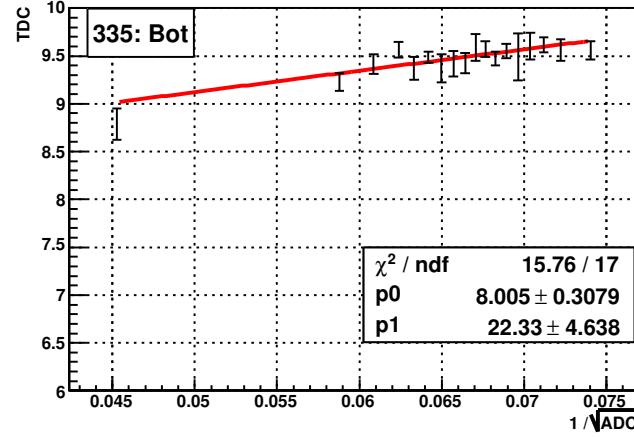
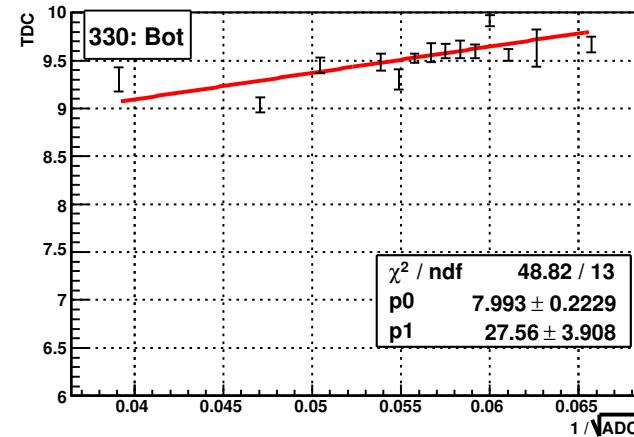
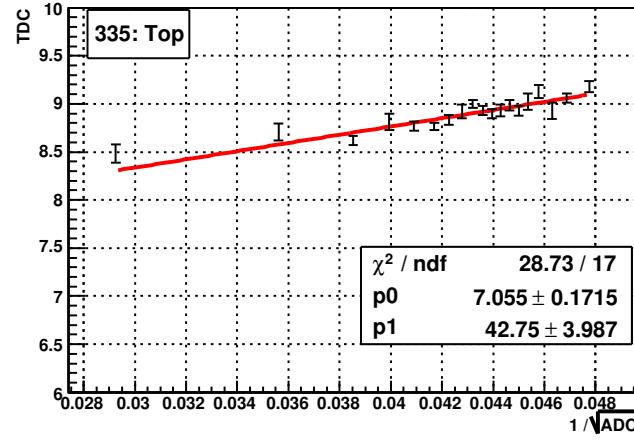
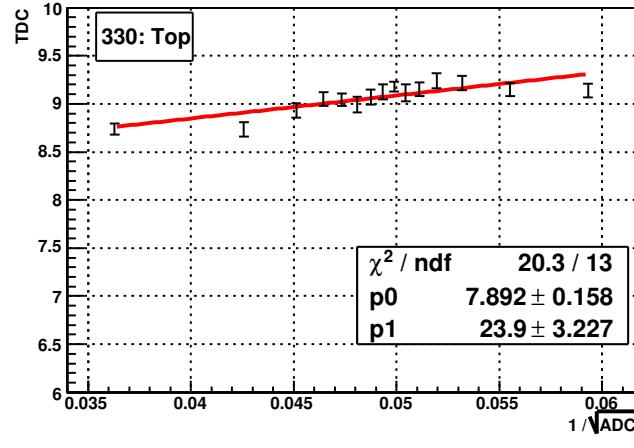
- NuMI target data, 1-4 GeV/c, single tracks match, no adj hits
- TDCs corrected for temperature, propagation along bar, arrival time, ADC's corrected for attenuation
- store TDC and $1/\sqrt{ADC}$
- sort entries → get mean TDC (gaussian fit) and average $1/\sqrt{ADC}$ for groups of at least 80 entries → Fit to first order polynomial
- similar to what Andre did for T) (he restricted the range of ADC's and fit TDC vs $1/\sqrt{ADC}$ to a second order polynomial)

fit of the time-walk data, bars 305 and 310



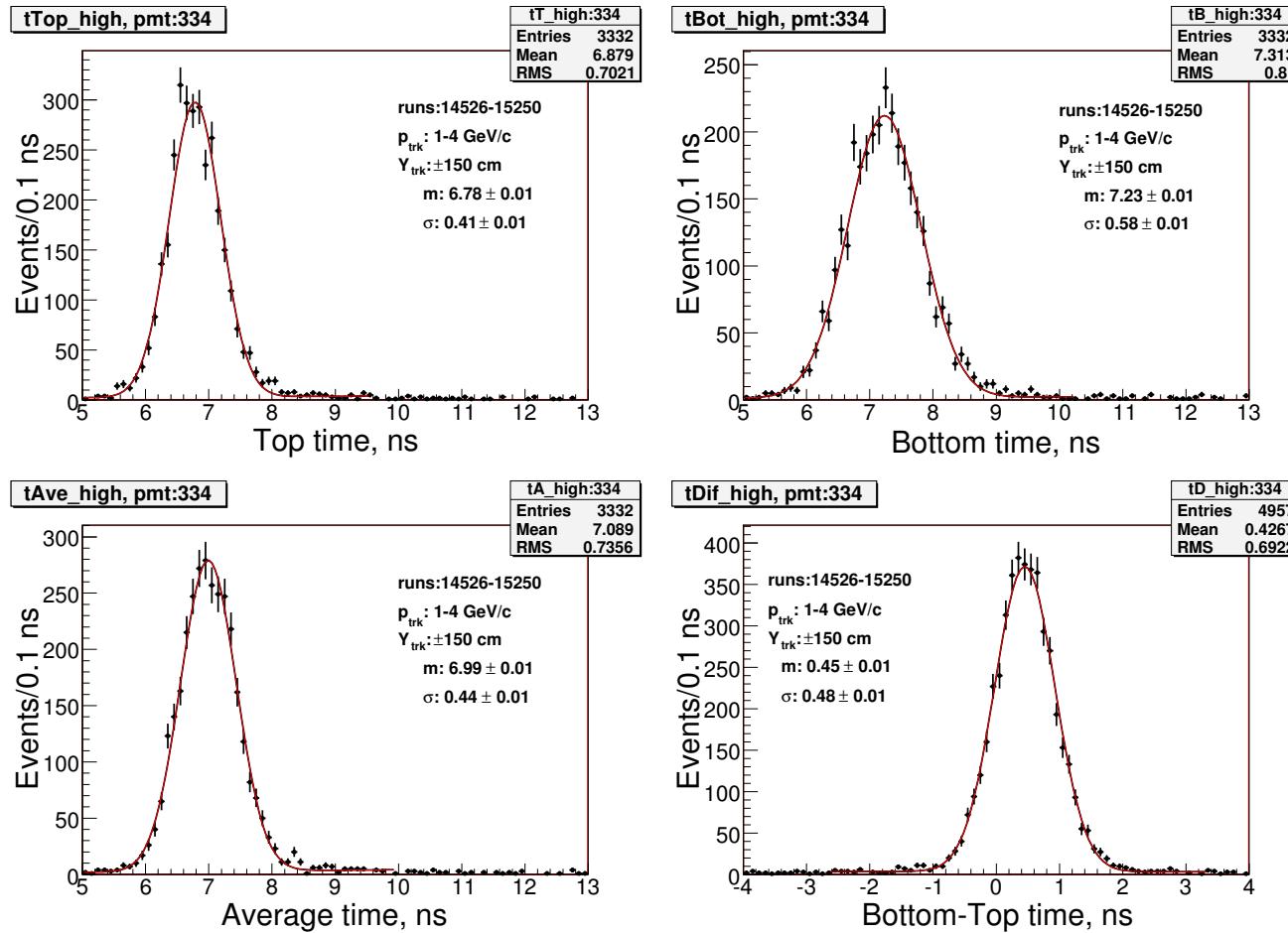
Fit of the TDC vs $1/\sqrt{ADC}$ for bars 305 and 310.

fit of the time-walk data, bars 330 and 335



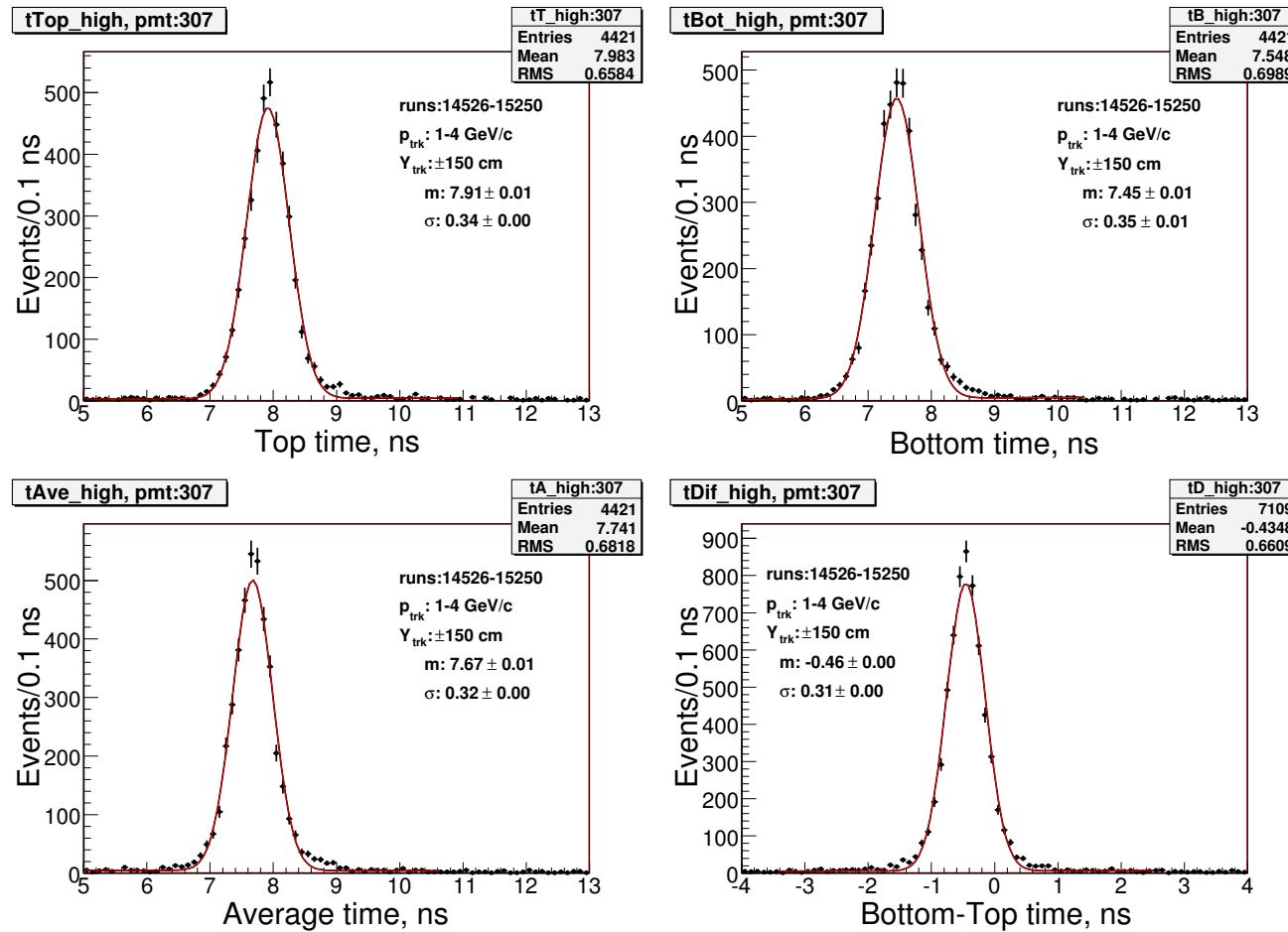
Fit of the TDC vs $1/\sqrt{ADC}$ for bars 330 and 335.

time resolution for bar 334, NuMI target



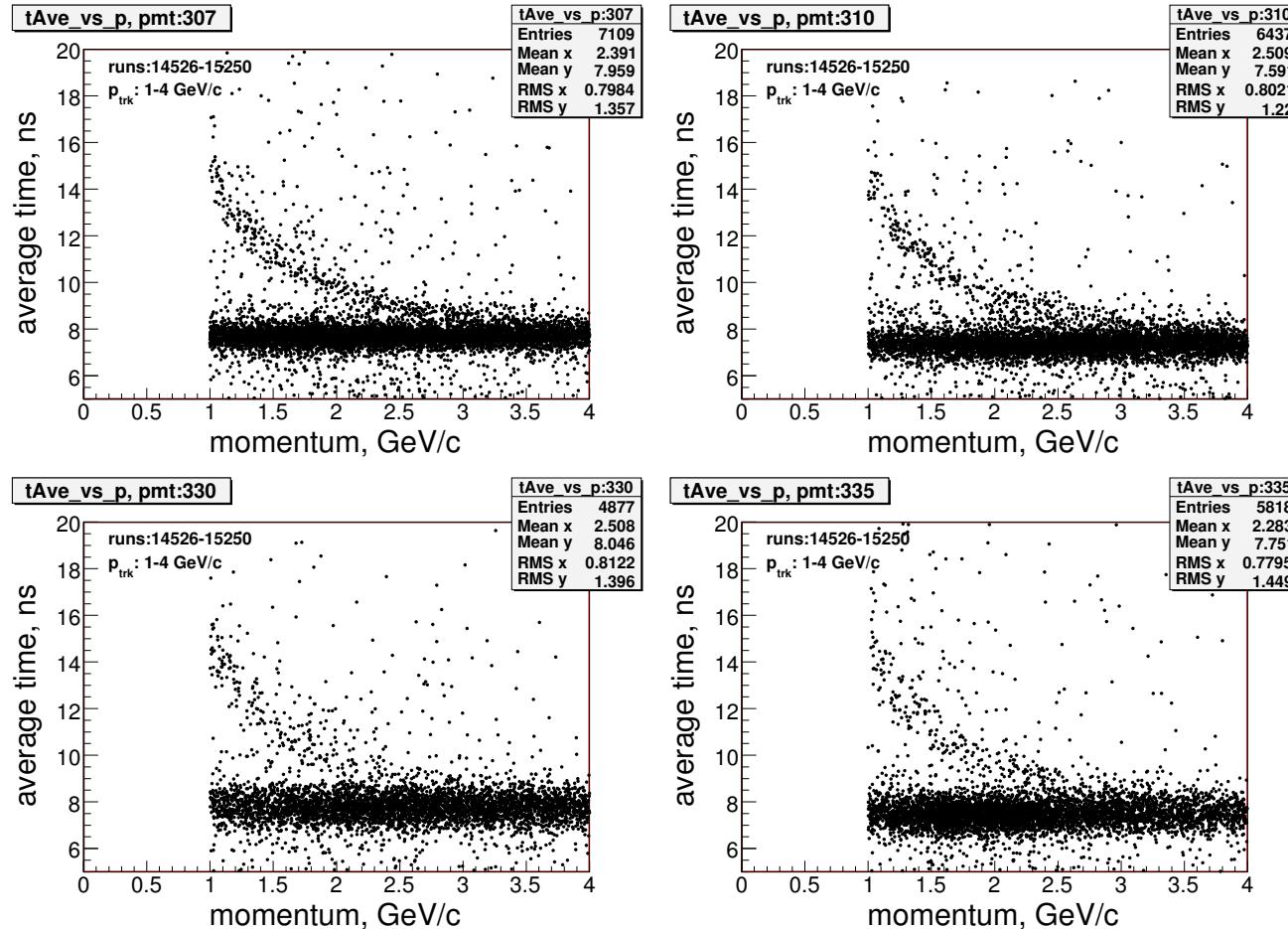
NuMI target data. Top left - the Top time, top right - the Bottom time, bottom left - the Average time, bottom right - the Bottom-Top time. Corrections taken on an account: the temperature variations, the time from both pmt's are consistent with the particles position, the particles flight time with the pion hypothesis, the speed of light in bar and the time-walk correction.

time resolution for bar 307, NuMI target



NuMI target data. Top left - the Top time, top right - the Bottom time, bottom left - the Average time, bottom right - the Bottom-Top time. Corrections taken on an account: the temperature variations, the time from both pmt's are consistent with the particles position, the particles flight time with the pion hypothesis, the speed of light in bar and the time-walk correction.

average vs p, NuMI target data, bars: 307,310,330 and 335



The average time vs the particles momentum distributions. The most populated band of the data points represents the pions. The small band within 1-2 GeV/c region, pointing to 15 ns at 1 GeV/c, indicates presence of the protons.